

REMARKS/ARGUMENTS

The specification has been conformed to correspond to the preferred format for U.S. patent applications as required in the Office Action, and a Substitute Specification and Comparison Copy are submitted herewith.

Claims 1-6, 8-10 and 12-16 are pending in this application. Claims 7, 11 and 17 have been cancelled.

The submission of color drawings was objected to because "this application does not contain the actual petition" for such drawings. Such a petition, dated March 8, 2004, was appended to the Preliminary Amendment of the same date. Attached hereto is a copy of the Preliminary Amendment together with the Petition Pursuant to 37 CFR 1.84(a)(2) to Accept Color Drawings, which also authorized the Commissioner to charge the corresponding fee of \$130 to the undersigned's deposit account.

In view thereof, the acceptance of the color drawings is requested.

In addition, applicants have filed new drawing figures for the color photographs from which the darkened backgrounds were removed. It is submitted that the drawings, including particularly the color drawings, are in acceptable form.

Claims 1-3 of the present application were rejected under 35 U.S.C. 102(b) as being anticipated by Matsumoto (6,356,272; '272). The Examiner stated that the '272 patent teaches the making of a colorful three-dimensional model comprising inputting 3D original measured data by explaining image data to be obtained by shooting the object of interest from a plurality of viewpoints with a camera carried by an operator moving around the object. By identifying the positions of the camera and the shooting directions for each shot of an image, a 3D shape model can be reconstructed.

Applicants have carefully reviewed the '272 patent and respectfully disagree with the assertion that the '272 patent teaches a method for transforming a generic model into a shape the same as the appearance of the inputted mesh. The '272 patent's method is based on a two-

dimensional model to construct a three-dimensional model. Basically, side views taken from different angles to the object in interest are inputted (step S10) for calculating the generation of two-dimensional silhouettes (S12) from which three-dimensional shades are generated. Reorganizing these three-dimensional shades into triangular meshes thereby enables the generation of a three-dimensional model from a two-dimensional model.

Claims 1-3 of the present application are for a method to transform the appearance of a 3D generic model into an appearance which is the same as the inputted meshes. Multiple 3D meshes and the generic model (S102, S104) are inputted. Then the generic model having a mesh distribution corresponding to the inputted 3D meshes is mapped to the 3D meshes. The generic model is thereby transformed into the shape which is the same as that of the model composed of the inputted meshes. The color of the inputted meshes is then projected to the transformed 3D model. Color blending is processed to harmonize the color on the transformed 3D model. Eventually, a 3D model having an appearance which is the same as that of the inputted 3D meshes and a structure the same as that of the 3D generic model is generated.

The concept of using a 3D generic model is not even suggested, much less is it disclosed by the '272 patent. Although both the '272 patent and the present invention are related to the generation of a 3D model, the processing methods of the two are not the same. The '272 patent uses multiple 2D images to create a 3D model. The present invention, as defined by claim 1, as well as depending claims 2-6, 8-10 and 12-16, uses inputted meshes to transform an already existing 3D generic model.

Applicants submit that the '272 patent does not teach or even suggest the subject matter of claim 1 as a whole, as becomes readily apparent from a careful review of the '272 patent, which is only concerned with using multiple 2D images to generate a 3D model. The '272 patent contains no suggestion how to transform the appearance of a 3D generic model into an appearance which is the same as the inputted meshes.

Thus, claim 1, and claims 2, 3 which depend from it, are not anticipated by the '272 patent.

Claims 4-6, 8-10 and 12-16, all of which depend directly or indirectly from claim 1, are allowable because they depend from allowable parent claim 1. These claims are further directed to independently patentable subject matter.

Claims 4-6 and 8-10 were rejected under 35 U.S.C. 103(a) for obviousness over the '272 patent. The Office Action asserted that the '272 patent teaches all of the claimed limitations of claim 4 of the present application, although it was acknowledged that the sequence rearrangement of measured data according to the overlapped relationship is not disclosed or taught by the '272 patent. The claims were nevertheless rejected because the '272 patent was viewed as implying to calculate color adjustment of the texture image of each original measured data as a means for color harmonizing of the colorful 3D model.

In fact, however, the careful review of the '272 patent shows that it does not disclose or in any manner suggest the color harmonizing steps as recited in the claims. Besides, the '272 patent would not suggest to or motivate a person of ordinary skill in the art to employ the color harmonizing steps recited in the claims.

Claims 6 and 8-11 explicitly recite the equation for color average A_i
$$=(A_{i,1} \times W_{i,1} + \dots + A_{i,i-1} \times W_{i,i-1}) / (W_{i,1} + \dots + W_{i,i-1})$$
, and the Office Action acknowledges that this is not taught by the '272 patent. It would not be obvious to one of ordinary skill in the art to utilize the calculation recited in the claims of the '272 patent because if color information is obtained and subjected to a weighted mean process, then that same technique would be a way of calculating color adjustment using mesh influenced weighted value in a straightforward manner with minimum calculations and reduced processing time.

As to the issues concerning the overlapped texture in the pixel blending required by claims 12-16 of the present application, it is noted from the claims that the distance is used as a weight. The distance is the corresponding position from the vertex of the mesh to the edge of the mesh, which corresponds to the texture space. The distance is different from that used in the 6,356,263 patent. In the '263 patent, it is used as a threshold to determine whether it is necessary to proceed with a subdivision between two points in a single triangle. That is, the concept

disclosed by the '263 patent only determines the distance between two points of a triangle and has nothing to do with color blending. In other words, the '263 patent only concerns whether it is necessary to subdivide the mold, and the present application applies to calculate the color blending. This is a fundamental difference between these claims and the '263 patent.


Thus, dependent claims 2-6, 8-11 and 12-16 are directed to independently patentable subject matter. These claims are additionally allowable because they depend from allowable parent claim 1.

CONCLUSION

In view of the foregoing, applicants submit that this application is in condition for allowance, and a formal notification to that effect at an early date is requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (415) 273-4730 (direct dial).

Respectfully submitted,


J. Georg Seka
Reg. No. 24,491

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200
Fax: (415) 576-0300
JGS:jhw
60686322 v1

Amendments to the Drawings:

Attached hereto are replacement drawing sheets Nos. 1 (Figs. 1(a)-(d)), 3 (Figs. 3A-D), 5 (Figs. 5, 6 and 7), 6 (Figs. 8A, B), 7 (Figs. 9 and 11), 10 (Figs. 13 and 14), 11 (Figs. 15A, B), and 13 (Figs. 17A-C). It is requested that these replacement sheets be substituted for the corresponding drawing sheets originally filed.

The “blackout” regions, or darkened backgrounds, have been moved from the above-referenced drawing figures as required in the Office Action.

No new matter has been added.

Attachment: Replacement Sheets